# Residual Nuclide Production by Proton-Induced Reactions on Uranium for Energies between 20 MeV and 70 MeV

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Within the HINDAS project, proton irradiation experiments were performed at the injector cyclotron of the Paul Scherrer Institute at Villigen/Switzerland in order to investigate the production of residual nuclides from natural uranium. The stacked-foil technique was used to cover proton energies between 20 MeV and 70 MeV. Copper targets were used for monitoring the proton beam using the reaction Cu-65(p,n)Zn-65. Residual radionuclides were measured by off-line gamma-spectrometry. Excitation functions were obtained for the production of Y-91, Zr-95, Nb-95m, Mo-99, Ru-103, Pd-112, Cd-115, Sb-124, Sb-126, Sb-127, Te-132, I-131, Cs-134, Cs-136, Cs-137, Ba-140, Ce-141, Ce-144, Nd-147, and Np-238. The experimental data are compared the sparse results of earlier measurements and with theoretical excitation functions calculated by the newly developed TALYS code. Good agreement between theory and experiment was obtained for product masses up to 115. For higher mass fission products and for Np-238 there are still systematic deviations between theory and experiments. These deviations are discussed as deficits of the fission model in the heavy part of the fission product distribution.

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